

### **REMARKS**

The Office Action mailed July 28, 2005 has been carefully reviewed and, in view of the above amendments and following remarks, reconsideration and allowance of the application are respectfully requested.

#### **I. Claim Summary**

Claims 1-25 and 34-38 are currently pending in the application, with claims 1, 10, 18, and 34 being independent claims. Claims 26-33 are cancelled; claims 34-38 are added; and claims 1-2, 5-6, 8, 13, and 15 are amended, in accordance with the above amendments.

#### **II. Office Action Summary**

The following claim rejections were submitted by the Examiner in the outstanding Office Action:

- Claims 18-27 and 30-33 are rejected under 35 U.S.C. §102(b) as being anticipated by a publication entitled *The Aerodynamics of a Tennis Ball* by Mehta, et al. and published in Sports Engineering, pages 177-189, 2001;
- Claims 1-6 and 10-14 are rejected under 35 U.S.C. §103(a) as being unpatentable over a combination of U.S. Patent Number 6,571,618 to Demay, et al. and U.S. Patent Number 3,306,101 to Holderer;
- Claims 7 and 15 are rejected under 35 U.S.C. §103(a) as being unpatentable over a combination of Demay, Holderer, and a publication entitled *Golf Ball Aerodynamics* by Bearman, et al. and published in Aeronautical Quarterly, pages 112-122, 1976;
- Claims 8-9 and 16-17 are rejected under 35 U.S.C. §103(a) as being unpatentable over a combination of Demay, Holderer, and Mehta;
- Claim 28 is rejected under 35 U.S.C. §103(a) as being unpatentable over a combination of Mehta and a publication entitled *Engineers Discover Secrets of Soccer Free Kicks* and published by Fluent, Inc.; and
- Claim 29 is rejected under 35 U.S.C. §103(a) as being unpatentable over a combination of Mehta, Fluent, and material in the application indicating that soccer balls include a plurality of panels joined together by seams.

The Office Action also objects to claims 2, 12-13, 15, and 32 for various informalities. Each of claims 2, 12-13, and 15 are amended, and the Applicants respectfully submit that the amendments overcome the objections. In addition, the Office Action rejects claims 4 and 13 under 35 U.S.C. §112, second paragraph.

### **III. Discussion of §112 Rejections**

Independent claim 1 defines a first direction and a second direction. The first direction corresponds with a direction between a leading edge and a trailing edge of a support, and the second direction is orthogonal to both the first direction and a longitudinal axis of the support. Independent claim 1 recites that the support is tapered between the leading edge and the trailing edge (i.e., in the first direction), and claim 4 recites that the support has a constant width in the second direction. The Applicant respectfully submit that it is not indefinite to recite that an object is tapered in a first direction and has constant width in an orthogonal second direction. A similar argument applies to claim 13.

### **IV. Discussion of Independent Claim 1**

Independent claim 1 recites a testing apparatus for a game ball. The testing apparatus has a support, a mount, a motor, and a sensor. The support has a leading edge and a trailing edge. The support is tapered between the leading edge and the trailing edge, and the support has a longitudinal axis that extends through a first end and a second end of the support. The mount is located proximal the first end of the support and configured to secure to the game ball, and the mount is rotatable about the longitudinal axis. The motor rotates the mount. The sensor detects forces upon the game ball in a first direction and a second direction when the motor rotates the mount. The first direction corresponds with a direction between the leading edge and the trailing edge, and the second direction is orthogonal to both the first direction and the longitudinal axis.

The Office Action rejects independent claim 1 as being obvious over a combination of Demay and Holderer. Demay discloses a support device for a motorized flying instrument, which appears to have a generally cylindrical configuration from the figures. Holderer discloses a composite force measuring assembly for "air-traversing vehicles such as aircraft, missiles, shells, etc." (Holderer, column 1, lines 42-43).

*i. All Limitations*

To establish obviousness, the burden is upon the Examiner to demonstrate that the prior art references teach or suggest all claim limitations. That is, all of the claim limitations must be taught or suggested by the prior art. According to the rejection, the device of Demay is configured to support a game ball and includes a mount. The rejection does not, however, indicate that the mount is configured to secure to the game ball, as recited by independent claim 1. That is, the rejection of independent claim 1 does not even suggest that the mounts of Demay and Holderer are configured to secure to a game ball.

As noted above, the support of Demay is for a motorized flying instrument, and the measuring assembly of Holderer is for air-traversing vehicles, such as aircraft and missiles. Accordingly, neither Demay nor Holderer disclose the concept of a mount configured to secure to a game ball.

*ii. Motor*

Independent claim 1 also recites that a motor rotates the mount. Although Demay may disclose that the mount is capable of rotating, Demay does not disclose that a motor rotates the mount. Moreover, the rejection of claims 8, 9, 16, and 17 specifically states that Demay and Holderer fail to disclose a motor. In order to remedy this deficiency, however, Demay and Holderer are combined with Mehta.

If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. The support of Demay is for a motorized flying instrument, and the measuring assembly of Holderer is for air-traversing vehicles, such as aircraft and missiles. Although not specifically stated in either reference, one skilled in the art would recognize that one purpose of the devices in Demay and Holderer is to determine the aerodynamic stability of motorized flying instruments and air-traversing vehicles. Utilizing an external source (i.e., a motor) to rotate the motorized flying instruments and air-traversing vehicles would render Demay and Holderer unsatisfactory for their intended purposes. That is, combining Demay and Holderer with a motor that rotates the mount would effectively prevent any determination as to aerodynamic stability of motorized flying instruments and air-traversing vehicles.

As an additional matter, the motorized flying instruments and air traversing vehicles discussed in Demay and Holderer appear to have a configuration that are usually oriented in one direction with regard to moving air. That is, a rocket, for example, is usually oriented such that one end of the rocket faces into a stream of moving air. The testing devices of Demay and Holderer permit, therefore, the motorized flying instruments and air traversing vehicles to retain this orientation. Adding a motor that rotates the mount to either of these testing devices would effectively rotate the motorized flying instruments and air traversing vehicles during wind tunnel testing, which would render the devices of Demay and Holderer unsatisfactory for their intended purposes.

Based upon the above discussion, the Applicants respectfully submit that independent claim 1 is allowable over the combination of Demay and Holderer, and claims 2-6 should be allowable for at least the same reasons. In addition, claims 7-9 should be allowable as Bearman and Mehta do not remedy the deficiencies discussed above.

#### **V. Discussion of Independent Claim 10**

Independent claim 10 recites a testing apparatus for a game ball. The testing apparatus includes a rotating element, a mount, an airfoil, and a sensor. The rotating element has a first end, a second end, and a longitudinal axis that extends through the first end and the second end. The rotating element is rotatable about the longitudinal axis. The mount is located proximal the first end of the rotating element and is configured to secure to the game ball. The mount is rotatable with the rotating element about the longitudinal axis. The airfoil extends around the rotating element and has a leading edge and a trailing edge. The sensor detects forces upon the game ball in a first direction and a second direction. The first direction corresponds with a direction between the leading edge and the trailing edge, and the second direction is orthogonal to both the first direction and the longitudinal axis.

The Office Action rejects independent claim 1 as being obvious over a combination of Demay and Holderer. To establish obviousness, the burden is upon the Examiner to demonstrate that the prior art references teach or suggest all claim limitations. That is, all of the claim

limitations must be taught or suggested by the prior art. None of the prior art references cited by the Examiner, however, disclose an airfoil.

According to the rejection, Demay discloses an airfoil extending around the rotating element, and the airfoil has a leading edge and a trailing edge (i.e., the streamlined casing 44 in Figure 3). The mere fact that the casing is streamlined, does not indicate that the casing is an airfoil. Every round object does not qualify as a sphere. Similarly, every streamlined object does not qualify as an airfoil. An airfoil is a term of art that denotes a shape with the ability to control stability, direction, lift, thrust, or propulsion, for example. Whereas independent claim 1 recites the presence of an airfoil, Demay merely discloses a streamlined casing without the qualities of an airfoil.

Based upon the above discussion, the Applicants respectfully submit that independent claim 10 is allowable over the combination of Demay and Holderer, and claims 11-14 should be allowable for at least the same reasons. In addition, claims 15-17 should be allowable as Bearman and Mehta do not remedy the deficiencies discussed above.

#### **VI. Discussion of Independent Claims 18**

Independent claim 18 recites a method of determining fluid properties of a game ball. The method includes rotating the game ball about an axis and inducing fluid flow around the game ball and in a first direction that is orthogonal to the axis. The method also includes sensing forces upon the game ball in the first direction and a second direction, the second direction being orthogonal to both the first direction and the axis.

The Office Action rejects independent claim 18 as being anticipated by Mehta. Mehta discloses a tennis ball test wherein a test ball is placed in a wind tunnel and rotated. Although Mehta appears to disclose that the coefficient of drag was measured for varying flow velocities and surface characteristics (i.e., the amount of fuzz on the surface). In contrast with the statements in the Office Action, however, Mehta does not indicate that forces corresponding to the forces in the second direction of independent claim 18 were measured. That is, Mehta does not disclose sensing forces upon a game ball in a first direction and a second direction, the second direction being orthogonal to both the first direction and the axis of rotation, as recited by independent claim 18. If the Examiner should disagree with this assessment, the Applicants

respectfully invite the Examiner to particularly point out where Mehta teaches sensing forces in these directions.

Based upon the above discussion, the Applicants respectfully submit that independent claim 18 is allowable over Mehta, and claims 19-25 should be allowable for at least the same reasons.

#### **VI. Discussion of Independent Claims 34**

Independent claim 34 recites a testing apparatus for a game ball. The testing apparatus includes a rotating element, a mount, a support, and a sensor. The rotating element has a first end, a second end, and a longitudinal axis that extends through the first end and the second end. The rotating element is rotatable about the longitudinal axis. The mount is located proximal the first end of the rotating element and is configured to secure to the game ball. The mount is rotatable with the rotating element about the longitudinal axis. The support extends around the rotating element, and the support has a rounded leading edge and a tapered trailing edge that define a teardrop shape in the support. The sensor detects forces upon the game ball in a first direction and a second direction. The first direction corresponds with a direction between the leading edge and the trailing edge, and the second direction is orthogonal to both the first direction and the longitudinal axis.

In contrast with the prior art of record, independent claim 34 recites that the support has a rounded leading edge and a tapered trailing edge that define a teardrop shape in the support. Accordingly, the Applicants respectfully submit that independent claim 34 is allowable and that claims 35-38 should be allowable for at least the same reasons.


#### **VII. Conclusion**

In view of the foregoing, the Applicants respectfully submit that all claims are in a condition for allowance. The Applicants respectfully request, therefore, that the rejections be withdrawn and that this application now be allowed.

This Amendment is being filed by facsimile transmission on November 22, 2005, along with a One Month Petition for Extension of Time. Should additional fees or extensions of time be deemed necessary for consideration of this Amendment, such fees or extensions are hereby

requested and the Commissioner is authorized to charge deposit account number 19-0733 for payment. If anything further is desirable to place the application in even better form for allowance, the Examiner is respectfully requested to telephone the undersigned representative at (503) 425-6800.

Respectfully submitted,

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